N91-14940

THE COMPACT FAR INFRARED EMISSION FROM THE YOUNG STELLAR OBJECT IRAS 16293-2422

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High resolution far infrared observations at 50 and 100 microns have been made of the young stellar object, IRAS 16293-2422. The observations were made using the Kuiper Airborne Observatory in 1988 April. They are part of a systematic high resolution study of nearby YSO's. The purpose of the project is to obtain resolution in the far infrared comparable to that at other wavelengths. Until recently, the highest resolution that has been available in the far infrared has been from either IRAS(angular resolution of ~4') or the KAO using standard FIR photometry(~35"). With scanning techniques (Lester et al. 1986), it is possible to obtain 10" resolution on bright sources. Such a resolution is necessary to better determine the physical conditions of the YSO, and to compare with models of star formation.

IRAS 16293-2422 first drew attention as a strong infrared source associated with strong CS emission (Walker et al. 1986) and a very compact CO outflow (Wootten and Loren, 1986). Located in the filamentary dark cloud L1689, part of the Rho Oph complex, the YSO has a luminosity similiar to that of L1551, about 30 solar luminosities. Mundy, Wilking and Myers (1986) found IRAS 16293-2422 has an elongated region (11" by less than 5") of thermal dust emission at 2.7 mm, as well as a compact ^{13}CO core of similiar dimensions. The major axis of the disk-like structure lies roughly perpendicular to the CO outflow. Mundy, Wilking and Myers found that the spectral

energy distribution of the source from 25 microns to 2.7 mm could be fit by a single dust temperature(41 K) assuming a $\lambda^{-1.5}$ dust emissivity law. In addition, they argued that their models were consistent with a sharp edged dust distribution for the YSO.

In order to better constrain the models for the source, we observed the YSO at both 50 and 100 microns on several flights in 1988 April from the KAO. Along the major axis we resolve the source at 100 microns, and find a FWHM size of 15" using Maximum Entropy deconvolution. This size is consistent with the disk size found by Mundy et al. We present estimates of the size both along the major and minor axis of the disk, as well as estimates of the dust temperature and 100 micron opacity for the YSO.

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